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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,193	12/08/2004	Shigeru Bando	1207-111	3243

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EXAMINER

MCMAHON, MARGUERITE J

ART UNIT PAPER NUMBER

3747

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/517,193

Applicant(s)

BANDO, SHIGERU

Examiner

Marguerite J. McMahon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-6 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 22 is/are rejected.
- 7) ☒ Claim(s) 3 and 7-21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/1/05; 12/8/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bando (5,265,565). Note (see Figure 16) a reciprocating engine comprising: first and second ring grooves disposed adjacent to each other in a reciprocating direction of a piston and formed in a side surface of said piston; first and second piston rings 3, 4 respectively fitted in said first and second ring grooves; partitioning means 10 for partitioning a space between said first and second piston rings into a thrust side space and an anti-thrust side space; and communicating means for allowing the thrust side space to communicate with a combustion chamber, said communicating means having a communicating passage 111 provided in an inner surface of a cylinder, and being adapted to allow the thrust side space to communicate with said combustion chamber through said communicating passage, wherein said communicating means is adapted to allow the thrust side space to communicate with said combustion chamber when said piston is located in a vicinity of a top dead center. Bando shows everything except utilizing more than one communicating passage. It would have been obvious to one having ordinary skill in the art to employ more than one passage in lieu of only one passage, since it has been held that mere duplication of the essential working parts of a

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device involves only routine skill in the art. *St. Regis Paper Co., v. Bemis Co.*, 193 USPQ 8.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bando (5,265,565) in view of Watanabe et al (5,894,824). Bando shows everything except said piston being coupled to said connecting rod by means of said piston pin, and said piston pin provided in said piston such that a line connecting an axis of said piston pin and an axis of a crankshaft is inclined toward the anti-thrust side with respect to a line connecting a center of said piston and the axis of said crankshaft. Watanabe et al teach that it is old in the art to provide a piston which is coupled to said connecting rod by means of said piston pin, and said piston pin provided in said piston such that a line connecting an axis of said piston pin and an axis of a crankshaft is inclined toward the anti-thrust side with respect to a line connecting a center of said piston and the axis of said crankshaft (see Figures 8-13c). It would have been obvious to one having ordinary skill in the art to employ a piston which is coupled to said connecting rod by means of said piston pin, and said piston pin provided in said piston such that a line connecting an axis of said piston pin and an axis of a crankshaft is inclined toward the anti-thrust side with respect to a line connecting a center of said piston and the axis of said crankshaft in lieu of a piston pin connection which is not inclined, since the two are art recognized alternatives, known for the same purpose, as evidenced by Applicant showing both variants in the Figures.

Allowable Subject Matter

Claims 3 and 7-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 4-6 are allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marguerite J. McMahon whose telephone number is 571-272-4848. The examiner can normally be reached on Monday-Wednesday and Friday, 10am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Cronin can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


MARGUERITE MCMAHON
PRIMARY EXAMINER